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**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on the Commission's Own Motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources.

Rulemaking 11-09-011  
(Filed September 22, 2011)

**ASSIGNED COMMISSIONER'S AMENDED SCOPING MEMO AND RULING  
REQUIRING PACIFIC GAS AND ELECTRIC COMPANY, SOUTHERN  
CALIFORNIA EDISON COMPANY, AND SAN DIEGO GAS & ELECTRIC  
COMPANY TO FILE PROPOSED REVISED ELECTRIC TARIFF RULE 21**

**1. Background**

The Commission initiated Rulemaking (R.) 11-09-011 on September 22, 2011 to review and, if necessary, revise the rules and regulations governing interconnecting generation and storage resources to the electric distribution systems of Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E). The utilities' rules and regulations pertaining to the interconnection of generation are generally set forth in Electric Tariff Rule 21.

On September 20, 2012, the Commission issued Decision (D.) 12-09-018 which adopted a settlement agreement that included revisions to Tariff Rule 21 and provided separate Generator Interconnection Agreement for Exporting Generating Facilities and Exporting Generating Facility Interconnection Request. The revisions to Tariff Rule 21 focused on the interconnection study process. The settlement agreement required that each utility revise its Tariff Rule 21 to assign

all interconnection requests to either the "Fast Track" - a screen-based, streamlined review process for net energy metering, non-export, and small exporting facilities<sup>1</sup> or the Detailed Study with three study processes for more complicated generating facilities.

## **2. Revising Technical Specifications for Inverters**

Tariff Rule 21 also sets forth the protective functions and equipment requirements for connection to the utilities' distribution networks. These requirements are based on the Institute of Electrical and Electronics Engineers' Standard 1547, which was last issued in 2003.

Most generating resources require an inverter to convert direct current from the generating resource to the voltage and frequency of the alternating current distribution system. Wind and photovoltaic resources produce direct current, and therefore need inverters, while hydroelectric and biomass generating units, which produce alternating current, do not. Generally, in California, about 90% of local (small scale) renewable generation is connected to the distribution grid through inverters. Fostering deployment of this type of generation is one of the goals of the California Solar Initiative, among other important policy objectives of this Commission.

Since 2003, the technical capabilities of inverters have advanced substantially. Today's "smart inverters" have many capabilities, including:

- The delivery of DC power into an AC system, such as photovoltaic power to the AC grid; and the delivery of AC power to a DC load, as in charging a battery from the grid.

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<sup>1</sup> With nameplate capacity of up to 3 Megawatt (MW) in SCE's and PG&E's service territories and up to 1.5 MW in SDG&E's service territory.

- The generation or absorption of reactive power so as to raise or lower the voltage at its terminals.
- Delivery of power in four quadrants, that is, positive real power and positive reactive power; positive real power and negative reactive power; negative real power and negative reactive power; and negative real power and positive reactive power.
- The detection of voltage and frequency at its terminals and the ability to react autonomously to mitigate abnormal conditions: to provide reactive power if the voltage is low; to increase real power output if the frequency is low.
- In combination with a communication link, to deliver real and reactive power and to charge and discharge storage facilities in accordance with signals from the utility.

If properly applied, smart inverters can improve the performance of the distribution grid and the network as a whole, or, conversely, if improperly applied, can present serious problems in terms of voltage control, the clearing of short circuits and the creation of dangerous “islanding” conditions. As greater numbers of renewable generating resources interconnect with the grid, the influence of the smart inverter will grow.

To develop proposals for to take advantage of these new capabilities, the parties to this proceeding created the Smart Inverter Working Group (Working Group). In January 2014, Working Group issued its “Recommendations for Updating the Technical Requirements for Inverters in Distributed Energy Resources.” The Recommendations were circulated to the parties via a February 7, 2014, assigned Administrative Law Judge ruling and were the subject of the February 29, 2014 prehearing conference.

The Working Group recommended the following revisions to Electric Tariff Rule 21 in what it categorizes as “Phase 1”:

- a. Anti-Islanding Protection: Revise Rule 21, Section H.1.a.(2) to reflect proposed new voltage ride-through settings;
- b. Low and High Voltage Ride-Through: Revise Rule 21, Section H.1.a. (2) and Table H.1 to reflect proposed new default voltage ride-through requirements;
- c. Low and High Frequency Ride-Through: Revise Rule 21, Section H.1.a.(2) and R21 Table H.2 to reflect proposed new frequency ride-through settings;
- d. Dynamic Volt-Var Operation: Revise Rule 21, Sections H.2.a, H.2.b, H.2.i and R21 table H.1 to reflect proposed new dynamic volt/var operations requirements;
- e. Ramp Rates: Add new Rule 21 sub-section within Rule 21, Section H to include proposed new ramp rate requirements;
- f. Fixed Power Factor: Revise Rule 21, Section H.2.i to reflect the proposed new fixed power factor requirements; and
- g. Soft Start Reconnection: Revise Rule 21, Section H.1.a.(2) to reflect proposed new reconnection by soft-start methods.

In addition, if the utilities consider it advantageous, they may propose criteria related to communications, controls and advanced functionalities of the inverter needed to implement control by the utility.

I find that it is time for the utilities to analyze these recommendations and, where justified, to propose specific modifications to Tariff Rule 21. I see these proposals as a beginning point for potential modifications Tariff Rule 21 to capture the technological advances offered by smart inverters.

**3. Change in Categorization for Updating Inverter Technical Requirements in Tariff Rule 21**

When opening this rulemaking, the Commission found that the scope would include the allocation of costs associated with interconnecting distributed generation to the distribution systems of PG&E, SCE, and SDG&E. Updating the technical requirements for inverters, however, will not involve the allocation of costs. The issues in this portion of the proceeding will establish inverter technical requirements for electric utilities. As such, this portion of the proceeding is properly categorized as “quasi-legislative” within the definition set forth in Rule 1.3(d) of the Commission’s Rules of Practice and procedure.

I, therefore, determine that this portion of the proceeding shall be categorized as quasi-legislative and that the ex parte rule found in Rule 8.3(b) will apply to this portion of the proceeding. Parties are cautioned that only communications strictly limited to inverter technical requirements fall within this categorization.

I will retain the determination that evidentiary hearings are not needed in this proceeding, and that the record will be developed with written comments and workshops.

**4. Requirement to File Revised Electric Tariff Rule 21**

No later than July 18, 2014, PG&E, SCE and SDG&E shall file and serve a draft Advice Letter filing seeking Commission approval of revisions to Electric Tariff 21 to conform to the seven recommendations made by the Working Group, and any other revisions needed to Tariff Rule 21 to facilitate deployment of smart inverter capabilities. Novel proposals shall be explained and supporting analysis provided, as well as any inability or unwillingness to adopt a recommendation.

The utilities shall meet and confer as needed, and, to the extent feasible, shall file identical revisions for their respective Tariff Rule 21. If a utility requires different revisions to Tariff Rule 21, such differences shall be explained. The effective date of the proposed revisions shall be clearly stated and explained, as well as any proposal for a permissive compliance period to accommodate the Underwriter's Laboratory certification process timeline.

As set forth below, the Working Group is contemplating further recommendations on communications and additional advanced inverter functions. The utilities should consider timing and efficiency in sequencing the Working Group's current and expected recommendations.

No later than August 18, 2014, parties may file and serve comments on the draft Advice Letter filings, and shall include any procedural recommendations. Any further procedural steps will be set by ruling.

**5. Including Electricity Storage Facilities in Tariff Rule 21**

The Commission's Energy Division is currently reviewing several issues associated with including electricity storage facilities within the terms of Tariff Rule 21. The Division should form a recommendation of issues that are ripe for Commission resolution, articulate and prioritize those issues, and make a procedural recommendation for resolution in this proceeding no later than July 18, 2014.

**6. Next Steps for Improving Interconnections with Distributed Energy Resources**

The Working Group Report also recommended a second phase to focus on communications between the grid operator and distributed energy resource, and a third phase to identify and address additional advanced inverter functionalities. The Working Group should file and serve a proposed description

of issues ready for Commission resolution and a proposed schedule for these issues no later than July 18, 2014.

## **7. Schedule**

Pursuant to the authorization set forth in Pub. Util. Code § 1701.5(b), the Phase II Amended Scoping Memo and Ruling adopted an 18-month timeframe, marking the deadline for resolution of this proceeding as March 26, 2014. The Commission issued D.14-03-011 to extend this proceeding to May 25, 2014 so that the Commission could consider the proposed decision mailed on February 5, 2014. The OIR presents many complex issues relevant to revising Rule 21 to better address today's market for distributed generation. For this reason, it is reasonable to further extend the § 1701.5(b) deadline for resolving this proceeding 24 months after the date of this scoping memo.

<b>EVENT</b>	<b>DATE</b>
PG&E, SCE and SDG&E file and serve draft Advice Letter filing seeking Commission approval of revisions to Electric Tariff 21 to conform to the recommendations of the Working Group, and any other proposed revisions.	July 18, 2014
Energy Division and Working Group file and serve proposed issue list and procedural schedules.	July 18, 2014
Parties file Comments on draft Advice Letter filings, with any procedural recommendations.	August 18, 2014
Any further procedural steps to be set by Assigned Commissioner Ruling.	To be scheduled

## **8. Categorization, Designation of Presiding Officer, Need for Hearings, and *Ex Parte* Communications**

In the June 13, 2012 scoping memo issued in this proceeding, this matter was categorized as ratesetting. As set forth above, the Commission's consideration of changes to Electric Tariff Rule 21 to include the autonomous

inverter functionalities listed herein shall be categorized as quasi-legislative.

Article 8 of the Commission's Rules of Practice and Procedure apply with respect to *ex parte* communications. Parties may appeal this ruling regarding categorization within 10 days, as allowed by Rule 7.6.

Evidentiary hearings are not needed.

I will continue to serve as the Presiding Officer.

## **9. Intervenor Compensation**

Because new issues have been identified in this proceeding, I permit parties to file requests for eligibility to claim intervenor compensation.<sup>2</sup> These requests are referred to as notices of intent to claim compensation under Pub. Util. Code § 1801. Such requests may be filed within 30 days of the date of today's ruling in accordance with Rule 17.1 of the Commission's Rules of Practice and Procedure and § 1801 of the Pub. Util. Code. Parties that have already filed notices of intent to claim intervenor compensation do not need to file any additional notices.

### **IT IS RULED that:**

1. The scope of issues and schedule as set forth above are adopted.
2. The duration of this proceeding is 24 months from the date of this amended scoping memo and ruling.
3. The categorization of the Commission's consideration of advanced inverter functionalities is quasi-legislative. Parties may appeal this categorization within 10 days as provided in Rule 7.6.
4. Rule 8.2(c) and Rule 8.3 apply with respect to *ex parte* communications.

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<sup>2</sup> Pub. Util. Code § 1804(a)(1).



5. No hearings are needed.

6. Commissioner Michael Picker is the assigned Commissioner and Presiding Officer. Administrative Law Judge (ALJ) Maribeth A. Bushey is the assigned ALJ for this proceeding.

7. Parties may file requests seeking eligibility for intervenor compensation under § 1801 of the Pub. Util. Code within 30 days of today's ruling.

Dated May 13, 2014, at San Francisco, California.

/s/ MICHAEL PICKER

Michael Picker  
Assigned Commissioner